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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/751,258

12/31/2003

Michael K. Eschmann

ITL 1082US (P18346)

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TROP PRUNER & HU, PC
1616 S. VOSS ROAD, SUITE 750
HOUSTON, TX 77057-2631

EXAMINER

SCHLIE, PAUL W

ART UNIT

PAPER NUMBER

2186

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/751,258	Applicant(s) ESCHMANN ET AL.	
	Examiner Paul W. Schlie	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-30 have been examined as filed 11/03/06.

Response to Arguments

2. Applicant's arguments dated 11/03/06 with respect to the rejection of claims 1-30 under 35 U.S.C. 112 first paragraph have been considered and are persuasive in view of the corresponding amendment of the claims; and thereby the rejection is withdrawn.

Applicant's remaining arguments dated 11/03/06 with respect to the rejection of claims 1-30 have been considered however are not persuasive. More specifically, as although Mandal et al. may not believe coalescing random previously cached writes is likely to be statistically significant on the average relative to coalescing sequentially received writes; Mandal et al. none the less clearly anticipates such coalescing as evidenced within paragraph [0071] "The cache has little chance to coalesce random writes in instead acts more like a seed-matching buffer" as previously cited below; and thereby claiming the same is not patentably distinguishable .

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mason, Jr. (6,304,946) in further view of Mandal et al. (US App. 2003/0088713).

As per independent claims 1, 11 and 21, Mason, Jr. teaches a system and/or method comprising the means by which multiple potentially non-sequentially cached logical disk block write requests may be subsequently coalesced into a single logical disk write request to improve the effective efficiency of a disk storage system, by way of teaching that groups of arbitrarily previously cached block writes may be identified as a candidate for inclusion within an aggregate coalesced write operation by forming and traversing a logical hierarchy of such cached blocks in a manner corresponding to their natural logical sequential ordering (see abstract and figure 4); however as it may be argued that Mason, Jr. does not explicitly teach that such previously non-sequentially cached writes may be written back as a single "larger" write operation not otherwise inherently composed of potentially multiple disk writes; Mandal et al. does teach this (see paragraph [0071] lines 7-9); and thereby considered obvious to one of ordinary skill in the art at the time of the claimed invention.

As per claims 2-10, 12-20 and 22-30, being dependant on claim 1, 11, 21 or correspondingly dependent claim inclusively, the search structure taught Mason, Jr. as reviewed above is further considered to implicitly teach that blocks stored within a cache organized by sets and ways are inherently searched in multiple directions and correspondingly may inherently coalesce blocks being comprised within multiple cache lines into a single write operation, but does not teach explicitly that otherwise taught by Mandal et al., being that cached written disk blocks may be identified with a dirty bit (page 4 column 2 paragraph 54), that multiple disk block cached lines may be flushed in the same operation (page 7 column 2 paragraph 74), and that the cache may be

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composed of non-volatile memory (page 1 column 1 paragraph 3). Thereby it is considered obvious to combine that taught by Mason Jr., with that taught by Mandal et al. relevant to the claims, for the benefit of improving the write-back efficiently of a disk cache.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul W. Schlie whose telephone number is 571-272-6765. The examiner can normally be reached on Mon-Thu 8:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 517-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


PIERRE BATAILLE
PRIMARY EXAMINER
4/12/07